

it must be concluded that Duponchel's and Zeller's insects are the same species.

In May, 1916, Mr. Ebray Sich took a fine ♀ with this spot clearly marked, at Northwood, Middlesex. This specimen was shown to Mr. J. H. Durrant, and it was then seen that several specimens in the British Museum collection exhibited this spot or traces of it. There is no doubt that *quadripunctella*, *bipunctella*, and *morosa* are merely forms of the same species. Had Zeller had a good series of this insect he would not have written the long note he appended to his description of *morosa*.

The pale spots vary in size, shape, and distinctness. I have seen British specimens of all the five forms mentioned here. The subjoined key many be useful.

1. Spots 2 and 3 conspicuous, there may be traces of other spots . . . , *quadripunctella*, Fab. (Fab., *Species Insect.*, ii., p. 298, 52, 1781).
2. Spots 1 and 2 conspicuous, 3 may be present, if so connected with 2 . . . ab. *bipunctella*, Dup. (Dup., *Hist. Nat. Lep.*, Suppl., iv., pp. 513-524, pl. 89, f. 9., 1844).
3. Spots 2 and 4 alone present . . . ab. *morosa*, Zell. (Zell., *Linn. Ent.*, vi., p. 181, 1852).
4. Spot 2 alone present . . . "ab. b" of Zeller. This may be called ab. *unipunctella*.
5. Spots 1-5 all visible . . . This may be called ab. *quinquepunctella* n. ab.

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### Hybrids of *Zygaena filipendulae* and of *Z. lonicerae*.

By Hon. H. ONSLOW.

In an interesting note in the April number of the *Entomologist's Record*, Mr. Bethune-Baker came to the conclusion that "any species of *Zygaena* found no difficulty in copulating with any other species." This refers to continental races in the wild state, which of course is a very different set of conditions from those experienced in artificial breeding.

Some observations on an attempt to breed hybrids between *Z. filipendulae* and *Z. lonicerae* in 1916-17 may not, however, be without interest.

The only record I can find of such hybrids is by W. H. Fletcher, "Notes on hybridising Burnet Moths," in the *Ent. Mo. Mag.*, vol. 29, p. 53.

In 1916 I procured about 200 males and females of the above species. By judiciously retarding it was so arranged that the insects emerged at the same time. A number of cages were arranged each containing five or six male *filipendulae* with a similar number of female *lonicerae*, and *vice versa*. These cages were filled with flowers and put in the sun. The males of both species made every attempt to pair, flying round and round the females while curving in their abdomens, but their attempts to copulate were in vain, in spite of the fact that the female did not appear to resist. After many failures the males would renew their attempts again and again, sometimes almost succeeding. The proportion of males to females in the cage was frequently varied, and many single pairs were also placed together. Certainly

while watching these efforts it was difficult not to believe that there existed some structural modification of the genitalia which prevented copulation, for as soon as an insect was given a mate of the same species copulation was instantaneously effected. Only one pairing between *Z. filipendulae* ♀ and *Z. loniceræ* ♂ was obtained. It lasted a normal time and the female laid nearly 300 eggs, most of which were fertile.

I had also a few *hippocrepidis* and *trifolii*, and obtained pairings between a *hippocrepidis* ♀ × *trifolii* ♂, *hippocrepidis* ♀ × *loniceræ* ♂, and *loniceræ* ♀ × *hippocrepidis* ♂. The first two females laid eggs which were infertile. The last pairing only lasted five minutes, and no eggs were laid.

The larvæ of the first cross fed well and hibernated successfully, but owing to a heart-rending accident were all killed just before they began to feed up. A similar attempt was made in 1917, and three pairings were obtained between *filipendulae* and *loniceræ*, but none of the eggs were fertile.

On the other hand no great difficulty was found in obtaining pairings between *trifolii* ♀ and *loniceræ* ♂, which proved fertile.

If any reader were to find five-spot and six-spot burnets in copula, he would be conferring the greatest favour if he would place the insects in a cardboard box lined with moist filter paper firmly sewn to the sides, and would send them to the author, at 3, Selwyn Gardens, Cambridge. The material is required for genetic research work.

[Unfortunately the above did not reach us until after the July number was published, and hence the request is probably too late for the present season.—H.J.T.]

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### Field Notes from Macedonia, 1918. I.

By CAPTAIN M. BURR, D.Sc., F.E.S., Etc.

The following few observations are the continuation of a little series of "Field Notes from Salonika," which appeared in the *Entomologist's Record* during 1916. Unfortunately, the collection of Orthoptera made in that year was destroyed in the great fire that ravaged Salonika in August last year, together with a quantity of other things that I valued. In 1917, partly from lack of time, and partly from lack of energy, I looked for little, took less, and lost that. All I have to show for last year is the record of a second, as yet unidentified, species of *Acrometopa*, which I found, together with *A. macropoda*, in one of the numerous gulches that split the hills on the right bank of the Struma valley; this second species differs from *A. macropoda* in the decidedly bluish tinge of its colour, in the shorter elytra, which are rounded at the apex, and not obliquely truncate, and the wings do not project beyond them.

It is not gratifying to have spent two and a half summers in so interesting and unworked a country as Macedonia, and to have little or nothing to show for it, so I have resolved for the rest of the present season to do as much collecting as time and circumstances permit. It is very desirable to make some observation on the habits of these creatures, and to make long series of the species which are abundant here, but unknown in other districts.

By the second half of February it really seemed that spring had begun; we had enjoyed some five or six weeks of fine sunny weather, broken by occasional sand storms, varied with blizzards. On February